

PRELIMINARY AMENDMENT
NS Entry of PCT/EP2003/012839

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-12. (Cancelled).

Claim 13. (New) An immunogenic, non-haemolytic *Actinobacillus pleuropneumoniae* (App) strain comprising a mutation in at least one region of the apxIA gene, and optionally a mutation in at least one region of the apxIIA gene, wherein each region encodes a transmembrane domain of the Apx haemolytic and cytolytic exotoxins.

Claim 14. (New) The strain of Claim 13, wherein said mutation is a deletion.

Claim 15. (New) The strain of Claim 14, wherein said deletion is in a region of the apxIA gene which encodes a second transmembrane domain of the App ApxI exotoxin.

Claim 16. (New) The strain of Claim 15, wherein said deletion is of nucleotides 886 to 945 of the apxIA gene.

Claim 17. (New) The strain of Claim 16, wherein, said strain additionally comprises a deletion in a region of the apxIIA gene which encodes a second transmembrane domain of the App ApxII exotoxin.

Claim 18. (New) The strain of Claim 17, wherein said deletion is of nucleotides 886 to 945 of the apxIIA gene.

Claim 19. (New) A vaccine composition against porcine pleuropneumonia comprising an immunogenically effective amount of the *Actinobacillus pleuropneumoniae* strain of any of Claims 13 to 18, and a pharmaceutically acceptable carrier.

Claim 20. (New) An immunogenic and non-haemolytic strain of *Actinobacillus pleuropneumonia* having the characteristics

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of that deposited in the Colección Española de Cultivos Tipo under registration number CECT 5985, or a mutant thereof.

Claim 21. (New) A vaccine composition against porcine pleuropneumoniae comprising an immunogenically effective amount of the *Actinobacillus pleuropneumoniae* of Claim 20; and a pharmaceutically acceptable carrier.

Claim 22. (New) An immunogenic and non-haemolytic strain of *Actinobacillus pleuropneumoniae* having the characteristics of that deposited in the Colección Española de Cultivos Tipo under registration number CECT 5994, or a mutant thereof.

Claim 23. (New) A vaccine composition against porcine pleuropneumonia comprising an immunogenically effective amount of the *Actinobacillus pleuropneumoniae* of Claim 22, and a pharmaceutically acceptable carrier.

Claim 24. (New) A method for obtaining an immunogenic, non-haemolytic *Actinobacillus pleuropneumoniae* (App) strain comprising the steps of:

- (A) identifying transmembrane domains of Apx haemolytic and cytolytic exotoxins from a virulent App strain; and
- (B) introducing a mutation in at least one region of the *apxIA* gene of said strain, and optionally in at least one region of the *apxIIA* gene of said strain, wherein each region encodes a transmembrane domain of the Apx haemolytic and cytolytic exotoxins.

Claim 25. (New) The method of Claim 24, wherein said mutation is a deletion.

Claim 26. (New) The method of Claim 25, wherein said deletion is in a region of the *apxIA* gene which encodes a second transmembrane domain of the App ApxI exotoxin.

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Claim 27. (New) The method of Claim 26, wherein said deletion is of nucleotides 886 to 945 of the *apxIA* gene.

Claim 28. (New) The method of Claim 27, wherein said method additionally comprises introducing a deletion in a region of the *apxIIA* gene which encodes a second transmembrane domain of the *App* *ApxII* exotoxin.

Claim 29. (New) The method of Claim 28, wherein said deletion is of nucleotides 886 to 945 of the *apxIIA* gene.